

WHAT IS CLAIMED IS:

1. A container for releasing a chemical additive in a liquid fuel composition comprising:

a fuel-impermeable casing defining a substantially hollow interior and at least one opening;

5 a fuel additive composition provided in the interior of said casing, said fuel additive composition comprising a chemical additive soluble in said fuel composition; and

10 at least one fuel-permeable element provided at or near the opening of the casing and effective to provide for release of a portion of the chemical additive into the fuel composition in contact with the casing.

2. The container of claim 1 wherein the casing is composed of a material selected from the group consisting of metals, polymeric materials, combinations thereof and mixtures thereof.

3. The container of claim 2 wherein the material is selected from the group consisting of metals, polyvinyl chloride, polyethylene, polypropylene, nylon, polyethylene vinyl acetate, polypropylene vinyl acetate, combinations thereof and mixtures thereof.

4. The container of claim 1 wherein the casing is a substantially cylindrical-shaped casing.

5. The container of claim 4 wherein the at least one opening comprises at least one open end of the cylindrical-shaped casing or at least one side opening in a sidewall of the cylindrical-shaped casing.

6. The container of claim 1 wherein the casing is a substantially bowl-shaped casing.

7. The container of claim 6 further comprising a cap member disposed across a top of the substantially bowl-shaped casing.

8. The container of claim 6 wherein the at least one opening is located in a top of the substantially bowl-shaped casing, in a side of the substantially bowl-shaped casing or in a bottom of the substantially bowl-shaped casing.

9. The container of claim 1 wherein the at least one fuel-permeable element comprises an at least partially dissolvable seal.

10. The container of claim 9 wherein the at least partially dissolvable seal comprises a support structure coated with a fuel soluble polymer.

11. The container of claim 10 wherein the support structure comprises a wire screen, a woven cloth or combinations thereof.

12. The container of claim 1 wherein the at least one fuel-permeable element includes a filter member.

13. The container of claim 1 wherein the at least one fuel-permeable element includes a porous membrane.

14. The container of claim 13 wherein the at least one fuel-permeable element includes at least one retention member effective in retaining the membrane in a substantially fixed position relative to the casing.

15. The container of claim 13 wherein the porous membrane is a microporous membrane having a pore size of between about 0.2 microns to about 100 microns.

16. The container of claim 13 wherein the porous membrane comprises a material selected from the group consisting of metals, glasses, polymeric materials, combinations thereof and mixtures thereof.

17. The container of claim 12 wherein said filter member comprises a semi-permeable membrane.

18. The container of claim 17 wherein the semi-permeable membrane comprises a material selected from the group consisting of metals, glasses, polymeric materials, papers, combinations thereof and mixtures thereof.

19. The container of claim 1 wherein the at least one opening comprises a plurality of openings and the at least one fuel-permeable element comprises a corresponding plurality of fuel-permeable elements.

20. The container of claim 1 wherein the fuel additive composition is provided in a particulate form.

21. The container of claim 1 wherein the fuel additive composition is present in the casing in a liquid form.

22. The container of claim 1 wherein the chemical additive is selected from the group consisting of dispersants/detergents, antioxidants, anti-wear agents, corrosion inhibitors, demulsifiers, flow improvers, lubricating agents, microbiocides and mixtures thereof.

23. The container of claim 1 wherein the at least one fuel-permeable element is at least partially coated with a coating polymeric material.

24. The container of claim 1 wherein the at least one fuel-permeable element comprises a fuel-soluble seal.

25. The container of claim 24 wherein the at least one fuel-permeable element comprises a fuel-soluble seal.

26. A method for releasing a chemical additive at a sustained rate into a fuel composition comprising placing the container of claim 1 in contact with the fuel composition.

27. A method for releasing a chemical additive at a sustained rate into a fuel composition comprising placing the container of claim 4 in contact with the fuel composition.

28. A method for releasing a chemical additive at a sustained rate into a fuel composition comprising placing the container of claim 6 in contact with the fuel composition.

29. A method for releasing a chemical additive at a sustained rate into a fuel composition comprising placing the container of claim 9 in contact with the fuel composition.

30. A method for releasing a chemical additive at a sustained rate into a fuel composition comprising placing the container of claim 13 in contact with the fuel composition.

31. A method for releasing a chemical additive at a sustained rate into a fuel composition comprising placing the container of claim 17 in contact with the fuel composition.

32. A seal assembly comprising:

a fuel-permeable membrane sized and adapted to be positioned in or near an opening in a casing defining a hollow interior containing a fuel additive soluble in the fuel composition, the membrane is adapted to be positioned so that substantially all of the additive leaving the hollow interior through the opening passes through the membrane, and

a seal member sized and adapted to be positioned relative to the opening in the casing to prevent additive leaving the hollow interior through the opening when the seal member is intact.

33. The seal member of claim 32 wherein the seal member is adapted to be compromised in the presence of the fuel composition, thereby allowing additive to leave the hollow interior through the opening.

34. The seal assembly of claim 33 wherein the seal member is at least partially fuel-soluble.

35. The seal assembly of claim 32 wherein the seal member comprises a support structure and a fuel-soluble polymer.

36. The seal assembly of claim 35 wherein the support structure includes at least one of a wire screen and a woven cloth.

37. The seal assembly of claim 32 which further comprises at least one retention member sized and adapted to be positioned to be effective in retaining the membrane in a substantially fixed position relative to the casing.

38. A fuel permeable assembly comprising:

a fuel-permeable membrane sized and adapted to be positioned in or near an opening in a casing defining a hollow interior containing a fuel additive soluble in the fuel composition, the membrane is adapted to be positioned so that substantially all of the additive leaving the hollow interior through the opening passes through the membrane, and

at least one retention member sized and adapted to be positioned to be effective in retaining the membrane in a substantially fixed position relative to the casing.

39. The assembly of claim 38 wherein the membrane comprises at least one of a porous membrane element and a semi-permeable membrane element.

40. The fuel-soluble assembly of claim 38 wherein the membrane comprises a microporous membrane element.